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- (71) Applicant: Canon KABUSHIKI KAISHA.
- (72) Inventors: Masahiro TAKAYANAGI, et al.
- (74) Agent: Patent Attorney, Masatake KOBAYASHI

(54) [Title of the Invention] DATA PROCESSOR AND PRINT CONTROLLER; DATA PROCESSING METHOD FOR DATA PROCESSOR AND DATA PROCESSING METHOD FOR PRINT CONTROLLER; AND STORAGE MEDIUM STORING COMPUTER-READABLE PROGRAM

(57) [Abstract]

[Object] To provide user-oriented print services while confirming details of print services provided and confirming details presented by alternatives.

[Solving Means] When processing print information requested by data processors 112 to 114 via a communication medium to an external shared printer 111, a printer control unit in the shared printer 111 calculates and presents estimate information based on specified print processing conditions to the requesting data processor, and the start of print processing is controlled as specified upon approval of said presentation or based on the alternative.

[Claims]

[Claim 1] A data processor capable of communicating with a print controller which controls an external shared printer capable of providing print processing services via a prescribed communication medium, comprising:

transfer means which transfers print information via said prescribed communication medium to said print controller;

receiving means which, after the transfer of said print information by said transfer means, receives response information returned from said print controller;

display means which causes a display unit to display said response information received by said receiving means;

indicating means which indicates the presence or absence of an approval to the response information displayed on said display unit by said display means; and

notifying means which notifies to said print controller execution or stoppage of printing to said print information transferred to said print controller on the basis of the state of indication by said indicating means.

[Claim 2] The data processor according to claim 2, wherein said response information includes an entered file name, estimate information calculated by said print controller, and print processing specifying information specified in said print information.

[Claim 3] The data processor according to claim 2, wherein said estimate information includes account information and a print processing time.

[Claim 4] The data processor according to claim 2, wherein said print processing specifying information includes a paper size, a kind of paper, a resolution, a kind of output and the number of sheets of output.

[Claim 5] A data processor capable of communicating with a print controller which controls an external shared printer capable of providing print processing services via a prescribed communication medium, comprising:

transfer means which transfers print information via said prescribed communication medium to said print controller;

receiving means which, after the transfer of said print information by said transfer means, receives first response information returned from said print controller or second response information different from said first response information;

first display means which causes a display unit to display for confirmation said first response information received by said receiving means;

first indicating means which indicates for approval or indicates as an alternative said first response information displayed on said display unit by said first display means;

first notifying means which, when an indication of approval is made by said first indicating means to said first response information, notifies execution of printing of said print information transferred to said print controller;

second display means which, when said first indicating means performs an alternative indication to said first response information, causes display of a plurality of said second response information received by said receiving means to said display unit as alternatives;

second indicating means which indicates adoption or stoppage of printing of said second response information displayed on said display unit by said second display means; and

second notifying means which notifies execution or stoppage of alternative printing to said print controller for said print information transferred to said print controller on the basis of the indication status due to said second indicating means.

[Claim 6] The data processor according to claim 5, wherein said first response information includes an entered file name, estimate information calculated by said print controller, and print processing indicating information indicated to said print information.

[Claim 7] The data processor according to claim 6, wherein

said estimate information include account information, and print processing time.

[Claim 8] The data processor according to claim 6, wherein said print processing indicating information includes a paper size, a kind of paper, a resolution, a kind of output, and a number of sheets of output specified in said print information.

[Claim 9] The data processor according to claim 5, wherein said second response information is alternative print information calculated by said print controller on the basis of the print processing specifying information specified in said print information.

[Claim 10] The data processor according to claim 9, wherein said alternative print information calculated into a plurality of pieces of information on the basis of printing resources of said shared printers.

[Claim 11] A data processing method for a data processor capable of communicating with a print controller which controls an external shared printer capable of providing print processing services via a prescribed communication medium, comprising:

 a transfer step of transferring the print information to said print controller via said prescribed communication medium;

 a receiving step of receiving, after transferring said

print information in said transfer step, the response information returned from said print controller;

a display step of displaying said response information received in said receiving step on a display unit;

an indicating step of indicating the presence or absence of an approval to the response information displayed on said display unit in said display step; and

a notifying step of notifying execution of printing or stoppage of printing for said print information transferred to said print controller on the basis of the indicating status in said indicating step to said print controller.

[Claim 12] The data processing method for a data processor according to claim 11, wherein said response information includes an entered file name, estimate information calculated by said print controller, and print processing indicating information indicated in said print information.

[Claim 13] The data processing method for the data processor according to claim 12, wherein said estimate information includes account information and a print processing time.

[Claim 14] The data processing method for the data processor according to claim 12, wherein said print processing indicating information includes a paper size, a kind of paper, a resolution, a kind of output, and a number of sheets of output specified in said print information.

[Claim 15] A data processing method for a data processor capable of communicating with a print controller which controls an external shared printer capable of providing print processing services via a prescribed communication medium, comprising:

a transferring step of transferring print information via said prescribed communication medium to said print controller;

a receiving step of receiving, after transferring said print information in said transferring step, first response information or second response information different from said first response information returned from said print controller;

a first displaying step of causing a display unit to display for confirmation said first response information received in said receiving step;

a first indicating step of indicating for approval or indicating as an alternative said first response information displayed on said display unit in said first displaying step;

a first notifying step of notifying, when approval of said response information is indicated in said first indicating step, execution of printing for said print information transferred to said print controller;

a second displaying step, when an indication as an

alternative is given to said first response information in said first indicating step, of displaying a plurality of alternatives of said second response information received in said receiving step to said display unit;

a second indicating step of indicating adoption or stoppage of printing of said second response information displayed on said display unit in said second displaying step; and

a second notifying step of notifying execution or stoppage of alternative printing of said print information transferred to said print controller on the basis of the indication status in said second indicating step to said print controller.

[Claim 16] The data processing method for the data processor according to claim 15, wherein said first response information includes an entered file name, estimate information calculated by said print controller, and print processing specifying information specified in said print information.

[Claim 17] The data processing method for a data processor according to claim 16, wherein said estimate information includes account information, and a print processing time.

[Claim 18] The data processing method for a data processor according to claim 16, wherein said print processing specifying information includes a paper size, a kind of

paper, a resolution, a kind of output, and a number of sheets of output specified in said print information.

[Claim 19] The data processing method for a data processor according to claim 15, wherein said second response information is alternative print information calculated by said print controller on the basis of print processing specifying information specified in said print information.

[Claim 20] The data processing method for a data processor according to claim 19, wherein said alternative print information is calculated into a plurality of pieces of information on the basis of print resources of said shared printer.

[Claim 21] A storage medium storing a computer-readable program which controls a data processor capable of communicating with a print controller which controls an external shared printer capable of providing print processing services via a prescribed communication medium, comprising:

- a transferring step of transferring print information to said print controller via said prescribed communication medium;

- a receiving step, after transferring said print information in said transferring step, of receiving response information returned from said print controller;

- a displaying step of displaying said response

information received in said receiving step on a display unit;

an indicating step of indicating the presence or absence of an approval to response information displayed on said display unit in said displaying step; and

a notifying step of notifying execution or stoppage of printing of said print information transferred to said print controller on the basis of the indication status in said indicating step to said print controller.

[Claim 22] The storage medium storing a computer-readable program according to claim 21, wherein said response information includes an entered file name, estimate information calculated by said print controller, and print processing specifying information specified in said print information.

[Claim 23] The storage medium storing a computer-readable program according to claim 22, wherein said estimate information includes account information and print processing time.

[Claim 24] The storage medium storing a computer-readable program according to claim 22, wherein said print processing specifying information includes a paper size, a kind of paper, a resolution, a kind of output, and a number of sheets of output specified in said print information.

[Claim 25] A storage medium storing a computer-readable

program which controls a data processor capable of communicating with a print controller controlling an external shared printer capable of providing print processing services via a prescribed communication medium, comprising:

- a transferring step of transferring print information to said print controller via said prescribed communication medium;

- a receiving step, after transferring said print information in said transferring step, of receiving a print response information returned from said print controller or a second response information different from said first response information;

- a first displaying step of causing a display unit to display for confirmation said first response information received in said receiving step;

- a first indicating step of indicating for approval or indicating as an alternative said first response information displayed on said display unit in said first displaying step;

- a first notifying step of notifying, when an approving indication is given to said first response information in said first indicting step, execution or printing of said print information transferred to said print controller;

- a second displaying step, when an alternative

indication of said first response information is conducted in said first indicating step, of causing said display unit to display a plurality of alternatives of said second response information received in said receiving step;

a second indicating step of indicating adoption or stoppage of printing of said second response information displayed on said display unit in said second displaying step; and

a second notifying step of notifying, to said print controller, execution or stoppage of alternative printing of said print information transferred to said print controller on the basis of the indication status in said second indicating step.

[Claim 26] The storage medium storing a computer-readable program according to claim 25, wherein said first response information includes an entered file name, estimate information calculated by said print controller, and print processing specifying information specified in said print information.

[Claim 27] The storage medium storing a computer-readable program according to claim 26, wherein said estimate information includes account information and print processing time.

[Claim 28] The storage medium storing a computer-readable program according to claim 26, wherein said print processing

specifying information includes a paper size, a kind of paper, a resolution, a kind of output, and a number of sheets of output specified in said print information.

[Claim 29] The storage medium storing a computer-readable program according to claim 25, wherein said second response information is alternative print information calculated by said print controller on the basis of print processing specifying information specified in said print information.

[Claim 30] The storage medium storing a computer-readable program according to claim 29, wherein said alternative print information is calculated into a plurality of pieces of information on the basis of print resources of said shared print.

[Claim 31] A print controller which controls a shared printer capable of providing print processing services through communication with an arbitrary data processor via a prescribed communication medium, comprising:

data receiving means which receives print information including print data from said data processor and processing indicating information of said print data;

calculating means which calculates print estimate information for outputting the print information through said shared printer on the basis of said processing indicating information received by said data receiving means;

responding means which returns response information including a print estimate information calculated by said calculating mean print execution approval information to the print requesting data processor;

confirming means which after returning said response information by said responding means, confirms an approval indicating status from said print requesting data processor; and

control means which controls print start or print stoppage by said shared printer for the print information received on the basis of the result of confirmation achieved by said confirming means.

[Claim 32] A printer controller which controls a shred printer capable of providing print processing services through communication with an arbitrary data processor via a prescribed communication medium, comprising:

data receiving means which receives the print information including print data from said data processor and processing indicating information of said print data;

calculating means which calculates print estimate information for outputting the print information through said shared printer on the basis of said processing indicating information received by said data receiving means;

first responding means which returns first response

information including print estimate information calculated by said calculating means and print execution approval information to the print requesting data processor;

first confirming means which after returning said first response information by said first responding means, confirms the approval indicating status from said print requesting data processor;

first control means which controls the start of printing or stoppage of printing by said shared printer for the print information received on the basis of the result of confirmation by said first confirming means;

a second responding means which returns, after responding to said first response information by said first responding means, the second response information including a plurality of print processing alternatives to the print information received on the basis of alternative requesting indication from said print requesting data processor;

second confirming means which, after returning said second response information by said second responding means, confirms the alternative approval indicating status from said print requesting data processor; and

second control means which controls the start of printing or stoppage of printing by said shared printer for the print information received on the basis of the result of confirmation by said first confirming means.

[Claim 33] A data processing method for a print controller which controls a shared printer capable of providing print processing services through communication with an arbitrary data processor via a prescribed communication medium, comprising:

- a data receiving step of receiving print information including print data from said data processor and processing indicating information of said print data;

- a calculating step of calculating print estimate information for outputting through said shared printer the print information on the basis of said processing indicating information received in said data receiving step;

- a responding step of returning the response information including the print estimate information, and the print execution approval information calculated in said calculating step to the print requesting data processor;

- a confirming step of confirming, after returning said response information in said responding step, the approval indicating status from said print requesting data processor; and

- a deciding step of deciding start of printing or stoppage of printing, by said shared printer, of the print information received on the basis of the result of confirmation in said confirming step.

[Claim 34] A data processing method for a print controller

which controls a shared printer capable of providing print processing services through communication medium, comprising:

a data receiving step of receiving print information including print data and processing indicating information of said print data from said data processor;

a calculating step of calculating print estimate information for outputting print information through said shared printer on the basis of said processing indicating information received in said data receiving step;

a first responding step of returning the first response information including the print estimate information calculated in said calculating step and the print execution approving information to the print requesting data processor;

a first confirming step, after responding to said first response information in said first responding step, of confirming to approval indicating status from said print requesting data processor;

a first deciding step of controlling start of printing or stoppage of printing by said shared printer for the print information received on the basis of the result of confirmation in said first confirming step;

a second responding step, after returning said first response information in said first responding step, of

returning the second response information including a plurality of first processing alternatives for the print information received on the basis of the alternative request indication from said print requesting data processor;

a second confirming step, after returning said second response information in said second responding step, of confirming the alternative approval indicating status from said print requesting data processor; and

a second deciding step of controlling start of printing or stoppage of printing by said shared printer for the print information received on the basis of the result of confirmation in said first confirming step.

[Claim 35] A storage medium storing a computer-readable program which controls a shared printer capable of providing print processing services through communication with an arbitrary data processor via a prescribed communication medium, comprising:

a data receiving step of receiving print information including print data and processing indicating information of said print data from said data processor;

a calculating step of calculating print estimate information for outputting print information through said shared printer on the basis of said processing indicating information received in said data receiving step;

a responding step of returning the response information

including print estimate information calculated in said calculating step and print execution approving information to the print requesting data processor;

a confirming step, after returning said response information in said responding step, of confirming the approval indicating status from said print requesting data processor; and

a deciding step of deciding start of printing or stoppage of printing by said shared printer for the print information received on the basis of the result of confirmation in said confirming step.

[Claim 36] A storage medium storing a computer-readable program which controls a shared printer capable of providing print processing services through communication with an arbitrary data processor via a prescribed communication medium, comprising:

a data receiving step of receiving print information including print data from said data processor and processing indicating information of said print data;

a calculating step of calculating print estimate information for outputting the print information through said shared printer on the basis of said processing indicating information received in said data receiving step;

a first responding step of returning first response information including the print estimate information

calculated in said calculating step and print execution approving information to the print requesting data processor;

a first confirming step, after returning said first response information in said first responding step, of confirming the approval indicating status from said print requesting data processor;

a deciding step of controlling start of printing or stoppage of printing by said shared printer for the print information received on the basis of the result of confirmation in said first confirming step;

a second responding step, after returning said first response information in said first responding step, of returning the second response information including a plurality of print processing alternatives for the print information received on the basis of the alternative request indication from said print requesting data processor;

a second confirming step, after returning said second response information in said second responding step, of confirming the alternative approved indicating status from said print requesting data processor; and

a second deciding step of controlling start of printing or stoppage of printing by said shared printer for the print information received on the basis of the result of confirmation in said first confirming step.

[Detailed Description of the Invention]

[0001]

[Technical Field of the Invention] The present invention relates to a data processor and a print controller capable of requesting print processing to an external shared printer capable of providing print processing services via a prescribed communication medium; a data processing method for such a data processor and a data processing method for such a print controller; and a storage medium storing a computer-readable program.

[0002]

[Description of the Related Art] When applying an account processing to a shared printer conventionally installed in a store, to be accessed via an information network, a user who is a customer transfers desired print data from the data processor, performs various kinds of prints of print processing on the shared printer, calculates print fees on the basis of a print time and a number of sheets of paper required during this process, and presents the print fees thus calculated after the completion of the print processing.

[0003] Therefore, if the fees required for print data processing have been presented print to printing, the fees are charged without fail even for a user who might discontinue processing of the print data, thus resulting in circumstances which cannot be considered a user-friendly

shared printer processing.

[0004]

[Problems to be Solved by the Invention] As a result, users who are customers could not know, prior to executive of printing, the cost necessary for data processing required for the intended print data (fees to be paid), or the printing processing time from start of printing processing up to the completion of printing of print data. Depending upon the amount be paid for the shared printer, no freedom is available as to the range of choices such as charge from color processing to monochromatic processing within the same amount of budget, or application of color processing with a reduced number of sheets, thus resulting in a of a problem of a lower utility value.

[0005] The present invention was developed to solve the above-mentioned problems. An object of the present invention is to provide a data processor and a print controller; a data processing method for such a data processor and a data processing method for such a print controller; and a storage medium storing a computer-readable program, in which, upon processing print information requested via a communication medium to an external shared printer, estimate information based on specified print processing conditions is presented to the requesting data processor; upon obtaining an approval on this presentation,

start of print processing required by the approval or based on an alternative is controller; when the user requests processing of the desired print information by accessing a shared printer installed in a store or the like, print service processing environment providing user-oriented print services can be freely achieved while confirming details of the print services provided, or which confirming the presented details of alternatives.

[0006]

[Means for Solving the Problems] A first aspect of the present invention provides a data processor capable of communicating with a print controller which controls an external shared printer capable of providing print processing services via a prescribed communication medium, comprising transfer means which transfers print information via the prescribed communication medium to the print controller; receiving means which, after the transfer of the print information by the transfer means, receives response information returned from the print controller; display means which causes a display unit to display the response information received by the receiving means; indicating means which indicates the presence or absence of an approval to the response information displayed on the display unit by the display means; and notifying means which notifies to the print controller execution or stoppage of printing to the

print information transferred to the print controller on the basis of the present invention, wherein the response information includes an entered file name, estimate information calculated by the print controller, and print processing specifying information specified in the print information.

[0007] In a second aspect of the present invention, the response information includes an entered file name, estimate information calculated by the print controller, and print processing specifying information specified in the print information. It is therefore possible to confirm in advance the correctness of details of the estimate information relative to the requested print information, and details of the print processing indicating information, and to present information necessary and sufficient for the user to approve the requested details.

[0008] In a third aspect of the present invention, the estimate information includes account information and a print processing time.

[0009] In a fourth aspect of the present invention, the print processing specifying information includes the paper size, the kind of paper, resolution, kind of output and the number of sheets of output.

[0010] A fifth aspect of the present invention provides a data processor capable of communicating with a print

controller which controls an external shared printer capable of providing services via a prescribed communication medium, comprising transfer means which transfers print information via the prescribed communication medium to the print controller; receiving means which, after the transfer of the print information by the transfer means, receives first response information returned from the print controller or second response information different from the first response information; first display means which causes a display unit to confirmation-display the first response information received by the receiving means; first indicating means which indicates for approval or indicates as an alternative the first response information displayed on the display unit by the first display means; first notifying means which, when an indication of approval is made by the first indicating means to the first response information, notifies execution of printing of the print information transferred to the print controller; second display means which, when the first indicating means performs an alternative indication to the first response information, causes display of a plurality of the second response information received by the receiving means to the display unit as alternatives; second indicating means which indicates adoption or stoppage of printing of the second response information displayed on the display unit by the

second display means; and second notifying means which notifies execution or stoppage of alternative printing to the print controller for the print information transferred to the print controller on the basis of the indication status due to the second indicating means.

[0011] In a sixth aspect of the present invention, the first response information includes an entered file name, estimate information calculated by the print controller, and print processing indicating information indicated to the print information.

[0012] In a seventh aspect of the present invention, the estimate information include account information, and print processing time.

[0013] In an eighth aspect of the present invention, the print processing indicating information includes a paper size, a kind of paper, a resolution, a kind of output, and a number of sheets of output specified in the print information.

[0014] In a ninth aspect of the present invention, the second response information is alternative print information calculated by the print controller on the basis of the print processing specifying information specified in the print information.

[0015] In a tenth aspect of the present invention, the alternative print information calculated into a plurality of

pieces of information on the basis of printing resources of the shared printers.

[0016] A eleventh aspect of the present invention provides a data processing method for a data processor capable of communicating with a print controller which controls an external shared printer capable of providing print processing services via a prescribed communication medium, comprising a transfer step of transferring the print information to the print controller via the prescribed communication medium; a receiving step of receiving, after transferring the print information in the transfer step, the response information returned from the print controller; a display step of displaying the response information received in the receiving step on a display unit; an indicating step of indicating the presence or absence of an approval to the response information displayed on the display unit in the display step; and a notifying step of notifying execution of printing or stoppage of printing for the print information transferred to the print controller on the basis of the indicating status in the indicating step to the print controller.

[0017] In a twelfth aspect of the present invention, the response information include an entered file name, estimate information calculated by the print controller, and print processing indicating information indicated in the print

information.

[0018] In a thirteenth aspect of the present invention, the estimate information include account information and a print processing time.

[0019] In a fourteenth aspect of the present invention, the print processing indicating information includes a paper size, a kind of paper, a resolution, a kind of output, and a number of sheets of output specified in the print information.

[0020] A fifteenth aspect of the present invention provides a data processing method for a data processor capable of communicating with a print controller which controls an external shared printer capable of providing print processing services via a prescribed communication medium, comprising a transferring step of transferring print information via said prescribed communication medium to the print controller; a receiving step of receiving, after transferring the print information in said transferring step, first response information or second response information different from the first response information returned from the print controller; a first displaying step of causing a display unit to display for confirmation said first response information received in the receiving step; a first indicating step of indicating for approval or indicating as an alternative said first response information displayed on

said display unit in said first displaying step; a first notifying step of notifying, when approval of the response information is indicated in the first indicating step, execution of printing for the print information transferred to the print controller; a second displaying step, when an indication as an alternative is given to the first response information in the first indicating step, of displaying a plurality of alternatives of the second response information received in the receiving step to the display unit; a second indicating step of indicating adoption or stoppage of printing of the second response information displayed on the display unit in the second displaying step; and a second notifying step of notifying execution or stoppage of alternative printing of the print information transferred to the print controller on the basis of the indication status in the second indicating step to the print controller.

[0021] In a sixteenth aspect of the present invention, the first response information includes an entered file name, estimate information calculated by said print controller, and print processing specifying information specified in the print information.

[0022] In a seventeenth aspect of the present invention, the estimate information includes account information, and a print processing time.

[0023] In a eighteenth aspect of the present invention, the

print processing specifying information includes a paper size, a kind of paper, a resolution, a kind of output, and a number of sheets of output specified in said print information.

[0024] In a nineteenth aspect of the present invention, the second response information is alternative print information calculated by the print controller on the basis of print processing specifying information specified in the print information.

[0025] In a twentieth aspect of the present invention, the alternative print information is calculated into a plurality of pieces of information on the basis of print resources of the shared printer.

[0026] A twenty-first aspect of the present invention provides a storage medium storing a computer-readable program which controls a data processor capable of communicating with a print controller which controls an external shared printer capable providing print processing services via prescribed communication medium; comprising a transferring step of transferring print information to the print controller via the prescribed communication medium; a receiving step, after transferring said print information in the transferring step, of receiving response information returned from the print controller; a displaying step of displaying the response information received in said

receiving step on display unit; an indicating step of indicating the presence or absence of an approval to response information displayed on said display unit in said displaying step; and a notifying step of notifying execution or stoppage of printing of the print information transferred to said print controller on the basis of the indication status in said indicating step to the print controller.

[0027] In a twenty-second aspect of the present invention, the response information includes an entered file name, estimate information calculated by the print controller, and print processing specifying information specified in the print information.

[0028] In a twenty-third aspect of the present invention, the estimate information includes account information and print processing time.

[0029] In a twenty-fourth aspect of the present invention, the print processing specifying information includes a paper size, a kind of paper, a resolution, a kind of output, and a number of sheets of output specified in the print information.

[0030] A twenty-fifth aspect of the present invention provides a storage medium storing a computer-readable program which controls a data processor capable of communicating with a print controller controlling an external shared printer capable providing print processing

services via prescribed communication medium, comprising a transferring step of transferring print information to the print controller via aid prescribed communication medium; a receiving step, after transferring said print information in the transferring step, of receiving a first response information returned from the print controller or a second response information different from said first response information; a first displaying step of causing a display unit to display for confirmation the first response information received in the receiving step; a first indicating step of indicating for approval or indicating as an alternative said first response information displayed on the display unit in the first displaying step; a first notifying step of notifying, when an approving indication is given to the first response information in said first indicating step, execution of printing of the print information transferred to the print controller; a second displaying step, when an alternative indication of the first response information is conducted in the first indicating step, of causing the display unit to display a plurality of alternatives of said second response information received in the receiving step; a second indicating step of indicating adoption or stoppage of printing of said second response information displayed on the display unit in the second displaying step; and a second notifying step of notifying,

to the print controller, execution or stoppage of alternative printing of the print information transferred to said print controller on the basis of the indication status in the second indicting step.

[0031] In a twenty-sixth aspect of the present invention, the first response information includes an entered file name, estimate information calculated by the print controller, and print processing specifying information specified in the print information.

[0032] In a twenty-seventh aspect of the present invention, the estimate information includes account information and print processing time.

[0033] In a twenty-eighth aspect of the present invention, the print processing specifying information includes a paper size, a kind of paper, a resolution, a kind of output, and a number of sheets of output specified in said print information.

[0034] In a twenty-ninth aspect of the present invention, the second response information is alternative print information calculated by said print controller on the basis of print processing specifying information specified in the print information.

[0035] In thirtieth aspect of the present invention, the alternative print information is calculated into a plurality of pieces of information on the basis of print resources of

the shared printer.

[0036] A thirty-first aspect of the present invention provides a print controller which controls a shared printer capable of providing print processing services through communication with an arbitrary data processor via a prescribed communication medium, comprising data receiving means which receives print information including print data from the data processor and processing indicating information of the print data; calculating means which calculates print estimate information for outputting the print information through said shared printer on the basis of the processing indicating information received by the data receiving means; responding means which returns response information including a print estimate information calculated by the calculating means and print execution approval information to the print requesting data processor; confirming means which after returning the response information by said responding means, confirms an approval indicating status from the print requesting data processor; and control means which controls print start or print stoppage by the shared printer for the print information received on the basis of the result of confirmation achieved by said confirming means.

[0037] A thirty-second aspect of the present invention provides a printer controller which controls a shared

printer capable of providing print processing services through communication with an arbitrary data processor via a prescribed communication medium, comprising data receiving means which receives the print information including print data from said data processor and processing indicating information of the print data; calculating means which calculates print estimate information for outputting the print information through the shared printer on the basis of the processing indicating information received by said data receiving means; first responding means which returns first response information including print estimate information calculated by the calculating means and print execution approval information to the print requesting data processor; first confirming means which after returning the first response information by the first responding means, confirms the approval indicating status from the print requesting data processor; first control means which controls the start of printing or stoppage of printing by the shared printer for the print information received on the basis of the result of confirmation by the first confirming means; a second responding means which returns, after responding to said first response information by the first responding means, the second response information including a plurality of print processing alternatives to the print information received on the basis of alternative requesting indication

from said print requesting data processor; second confirming means which, after returning the second response information by the second responding means, confirms the alternative approval indicating status from the print requesting data processor; and second control means which controls the start of printing or stoppage of printing by the shared printer for the print information received on the basis of the result of confirmation by the first confirming means.

[0038] A thirty-third aspect of the present invention provides a data processing method for a print controller which controls a shared printer capable of providing print processing services through communication with an arbitrary data processor via a prescribed communication medium, comprising a data receiving step of receiving print information including print data from the data processor and processing indicating information of said print data; a calculating step of calculating print estimate information for outputting through the shared printer the print information on the basis of the processing indicating information received in the data receiving step; a responding step of returning the response information including the print estimate information, and the print execution approval information calculated in the calculating step to the print requesting data processor; a confirming step of confirming, after returning the response information

is the responding step, the approval indicating status from the print requesting data processor; and a deciding step of deciding start of printing or stoppage of printing, by said shared printer, of the print information received on the basis of the result of confirmation in the confirming step.

[0039] A thirty-fourth aspect of the present invention provides a data processing method for a print controller which controls a shared printer capable of providing print processing services through communication with an arbitrary data processor via a prescribed communication medium, comprising a data receiving step of receiving print information including print data and processing indicating information of the print data from said data processor; a calculating step of calculating print estimate information for outputting print information through the shared printer on the basis of the processing indicating information received in said data receiving step; a first responding step of returning the first response information including the print estimate information calculated in the calculating step and the print execution approving information to the print requesting data processor; a first confirming step, after responding to said first response information in the first responding step, of confirming the approval indicating status from the print requesting data processor; a first deciding step of controlling start of printing or stoppage

of printing by the shared printer for the print information received on the basis of the result of confirmation in the first confirming step; a second responding step, after returning the first response information in the first responding step, of returning the second response information including a plurality of print processing alternatives for the print information received on the basis of the alternative request indication from the print requesting data processor; a second confirming step, after returning said second response information in said second responding step, of confirming the alternative approval indicating status from the print requesting data processor; and a second deciding step of controlling start of printing or stoppage of printing by said shared printer for the print information received on the basis of the result of confirmation in said first confirming step.

[0040] A thirty-fifth aspect of the present invention provides a stoppage medium storing a computer-readable program which controls a shared printer capable of providing print processing service through communication with an arbitrary data processor via a prescribed communication medium, comprising a data receiving step of receiving print information including print data and processing indicating information of said print data from the data processor; a calculating step of calculating print estimate information

for outputting print information through the shared printer on the basis of the processing indicating information received in the data receiving step; a responding step of returning the response information including print estimate information calculated in the calculating step and print execution approving information to the print requesting data processor; a confirming step, after returning said response information in said responding step, of confirming the approval indicating status from the print requesting data processor; and a deciding step of deciding start of printing or stoppage of printing by the shared printer for the print information received on the basis of the result of confirmation in the confirming step.

[0041] A thirty-sixth aspect of the present invention provides a storage medium storing a computer-readable program which controls a shared printer capable of providing print processing services through communication with an arbitrary data processor via a prescribed communication medium, comprising a data receiving step of receiving print information including print data from the data processor and processing indicating information of the print data; a calculating step of calculating print estimate information for outputting the print information through the shared printer on the basis of the processing indicating information received in set data receiving step; a first

responding step of returning first response information including the print estimate information calculated in the calculating step and print execution approving information to the print requesting data processor; a first confirming step, after returning the first response information in the first responding step, of confirming the approval indicating status from the print requesting data processor; a deciding step of controlling start of printing or stoppage of printing by the printer for the print information received on the basis of the result of confirmation in the first confirming step; a second responding step, after returning said returning the second response information including a plurality of print processing alternatives for the print information received on the basis of the alternative request indication from the print requesting data processor; a second confirming step, after returning said second response information in said second responding step, of confirming the alternative approval indicating status from said print requesting data processor; and a second deciding step of controlling start of printing or stoppage of printing by said shared printer for the print information received on the basis of the result of confirmation in the first confirming step.

[0042]

[Embodiments] (First Embodiment) Fig. 1 is a block diagram

illustrating the configuration of a print system to which the data processor and the print controller of the first embodiment of the present invention is applicable.

[0043] In Fig. 1, reference numeral 111 represents a shared printer having a configuration enabling various users to communicate therewith via a network 115 serving as a communication medium. The share printer 111 is installed at an arbitrary position satisfying a certain distance relationship which enables the user requesting a printing job to come and acquire the result of printing. For example, such as shared printer 111 is installed in a laboratory or a convenient store capable of providing digital printing services. The print processing requester may come to the laboratory to obtain the result of output or obtain the same via any other conveying service (door-to-door delivery service).

[0044] The shared printer 111 has a color printer engine capable of performing various digital image processing jobs and has a configuration permitting output of the result of printing job onto a recording sheet of paper. The shared printer 111 is connected to a printer controller or a server unit which performs receiving of print information, editing of the received print information (compression processing, extending processing and other image processing jobs, including layout on a template for layout previously

prepared) and notification of estimate information.

Networks include cases working via webs such as the internet.

[0045] Reference numerals 112 to 114 represent computers serving as data processors, installed in general homes, and can communicate with the shared printer 111 or other computers via a network 115. The computers 112 to 114 may be portable personal computers.

[0046] For example, a customer transfers the print data (printing job) via webs built on the network 115 from computer 112. The shared printer 111 transfers estimate information associated with a print processing shown in Fig. 2, as derived from the received print data to the customer's computer 112. The customer watches the transferred estimate information and determines whether or not printing is to be performed.

[0047] Fig. 2 illustrates a typical information display screen transferred from the shared printer 111 to the computers 112 to 114 shown in Fig. 1, corresponding to estimate information screen display regarding printing processing displayed on the display units of the individual computers 112 to 114.

[0048] In Fig. 2, the estimate information regarding print processing includes a file name F1 concerning the received print information, an amount F2 for printing, a scheduled time of print completion F3, and other print information F4

such as a paper size, a kind of paper, a resolution, monochromatic/color, and a number of sheets of paper, displayed in a prescribed format.

[0049] Reference numerals BT1 and BT2 represent selection buttons. When actually carrying out printing requested to the shared printer 111, the selection button BT1 is pressed down. When discontinuing printing asked to the shared printer 111, the selection button BT2 is pressed down.

[0050] Fig. 3 is a block diagram illustrating the detailed configuration of the print system to which the data processor and the print controller of the first embodiment of the present invention are applicable. The description here is based on a typical laser beam printer (Fig. 1). The present system is of course applicable also to a system connection-processed to an external network via a network such as a LAN.

[0051] In Fig. 3, reference numeral 3000 is a host computer.

The host computer 3000 has a CPU 1 which executes document processing containing a mixture of graphics, images, characters and tables (including spreadsheet) on the basis of a document processing program stored in a program RAM. The CPU 1 comprehensively controls the individual devices connected to the system bus 4. Reference numeral 2000 represents a data processing unit.

[0052] The program ROM of this ROM 3 stores control program

of CPU 1 and the like. The font ROM of the ROM 3 stores font data and the like used upon the above-mentioned document processing. The data ROM of the ROM 3 stores various data used upon document processing described above (for example, programs of various page describing languages or font rasterizing data).

[0053] Reference numeral 2 represents a RAM expansible by an optional RAM or the like, and serves as a main memory work area of the CPU 1; and 5 represents a keyboard controller (KBC) which controls key inputs from a keyboard 9 or a pointing device not shown.

[0054] Reference numeral 6 represents a CRT controller (CRTC) which controls the display of the CRT display (CRT) 10; and 7 represents a disk controller (DKC), which controls access to boot programs, various applications, font data, user files, a hard disk (HD) storing edition files external memories 11 such as a floppy disk.

[0055] Reference numeral 8 represents a printer controller (PRTCD), which is connected to the printer 1500 via a prescribe interactive interface (interface) 21 execute communication control processing with the printer. The CPU 1 executes deployment processing (rasterize) an outline font into the display information RAM region set, for example, on the RAM 2 to print WYSIWYG on the CRT 10.

[0056] The CPU 1 opens various windows registered on the

basis of command specified by a mouse cursor not shown on the CRT 10 to execute various data processing jobs.

[0057] In the printer 1500, reference numeral 12 represents a printer CPU (CPU), which comprehensively controls access to various devices connected to the system bus on the basis of the control program stored in the program ROM of the ROM 13 or of the control program stored in the external memory 14, and outputs image signals as output information to a printing section (printer engine) 17 connected via a print section interface 16.

[0058] Control programs executable by the CPU 12 such as those shown in flowcharts of Figs. 3 to 5 are store in the program ROM of the ROM 13. Font data and the like (including outline font data) used upon generating the above-mentioned output information are stored in the font ROM of the ROM 13. For a printer not having an external memory 14 such as a hard disk, information used on the host computer 3000 is stored in the data ROM of the ROM 13.

[0059] The CPU 12 can perform communication processing with the host computer via an input section 18, and has a configuration in which information in the printer 1500 can be notified to the host computer 3000.

[0060] Reference numeral 19 represents a RAM, which mainly serves as a main memory and work areas of the CPU 12, and has a configuration in which the memory capacity can be

expanded by an optional RAM connected to added ports not shown.

[0061] The RAM 19 is used for an output information displaying area, an environment data storing area, and NVRAM.

Accesses to the external memories 14 such as the above-mentioned hard disk (HD) and IC card are controlled by a disk controller (DKC) 20. The external memories 14 are optionally connected, and store font data (including font data downloaded from the host computer 3000 and the like), emulation program (including emulation programs downloaded from the host computer 3000 and the like) and form data (downloaded from the host computer and the like).

[0062] Reference numeral 1501 represents an operation panel on which operating switches, LED displays and the like are arranged.

[0063] The number of the above-mentioned external memories is not limited to one, but may be at least one. The configuration may be such that a plurality of external memories store, in addition to the built-in fonts, optional font cards, and programs interpreting printer control languages of different language system. Furthermore, the external memories 14 may have an NVRAM not shown, and printer mode setting information from the operation panel 1501 may be stored by users and groups.

[0064] The printer 1500 should preferably be connected to

various finisher units (such as a sorter, a stapler and two-side units) so as to permit application of the desired sheet post treatment to printed sheets.

[0065] The characteristic configuration of this embodiment will now be described with reference to Fig. 3 and other drawings.

[0066] The present invention provides a data processor capable of communicating with a print controller (printer control unit 1000) which controls an external shared printer (a printer engine 17 of a printer 1500 capable of carrying out color printing) capable of providing print processing services via a prescribed communication medium (network (web)) having the above-mentioned configuration, comprising transfer means which transfers print information to said print controller via the prescribed communication medium (CPU 1 controls transfer processing through execution of a control program stored in a ROM 3, a hard disk 12, or an external memory 11); receiving means which receives the response information returned from the print controller after transferring the print information by the transfer means (CPU 1 carries out the receiving processing through execution of the control program stored in the ROM 3, the hard disk 12 or the external memory 11); display means which causes a display unit (CRT 10) to display the response information received by the receiving means (the CRTC 6

performs the display processing on the basis of an indication of the CPU 1); indicating means which indicates the presence or absence of an approval to the response information displayed on the display unit by the display means (a keyboard 9, a pointing device not shown); and notifying means which notifies execution or stoppage of printing of the print information transferred to the print controller on the basis of the indication status by the indicating means to the print controller (the CPU 1 conducts the notifying processing through execution of the control program stored in the ROM 3, the hard disk 12 or the external memory 11). As a result, it is possible to confirm the response information returned to the output processing request of the print information of which the output is requested to the external printer, and the user who is the requester can decide acceptability of the start of print processing of the print information, thus permitting smooth accomplishment of user-oriented print services deputing the print processing via the external shared printer.

[0067] The above-mentioned response information includes, as shown in Fig. 2, an entered file name, estimate information calculated by the print controller, and the print processing indicating information indicated in the print information. The user can therefore confirm in advance the correctness of details of the estimate

information and the print processing indicating information as compared with the requested print information, thus permitting presentation of information necessary and sufficient for the user to approve the details of request.

[0068] The estimate information includes account information and a print processing time. The user can therefore confirm in advance the correctness of details of the estimate information such as the account information and the print processing time as compared with the requested print information, thus permitting presentation of information necessary and sufficient for the user to approve the details of request.

[0069] The print processing indicating information includes a paper size, a kind of paper, a resolution, a kind of output, and a number of sheets of output specified in the print information. The user can therefore confirm in advance the correctness of details of the print processing information such as a paper size, a kind of paper, a resolution, a kind of output, and a number of sheets of output specified in the print information, thus permitting presentation of information necessary and sufficient for the user to approve the details of request.

[0070] The present invention provides a data processor capable of communicating with a print controller (printer control unit 1000) which controls an external shared printer

(a printer 1500 capable of performing color printing) capable of providing print processing services via a prescribed communication medium (network (web)), comprising a transferring means which transfers the print information to the print controller via the prescribed communication medium (the CPU 1 carries out the transfer processing through execution of the control program stored in the ROM 3, the hard disk 12 or the external memory 11); receiving means which, after transferring the print information by the transfer means, receives first response information returned from the print controller or second response information different from the first response information (the CPU 1 carries out receiving processing through execution of the control program stored in the ROM 3, the hard disk 12, or the external memory 11); first display means which causes a display unit (CRT 10) to display for confirmation the first response information received by the receiving means (the CRTC 6 performs display processing on the basis of the indication of the CPU 1); first indicating means which conducts indication for approval or indication as an alternative of the first response information indicated by the first display means on the display unit (a keyboard 9, a pointing device not shown); first notifying means which, when an approving indication is given by the first indicating means to the first response information, notifies

printing execution to the print information transferred to the print controller (the CPU 1 carries out a notifying processing through execution of the control program stored in the ROM 3, the hard disk 12, or the external memory 11); second display means which, when an indication of alternative is given by the first indicating means to the response information, causes the display unit to display a plurality of alternatives of the second response information received by the receiving means (the CRTC 6 conducts display processing on the basis of the indication by the CPU 1); second indicating means which indicates an approving indication or print stoppage indication of the second response information displayed on the display unit by the second display means (a keyboard 9, a pointing device not shown); and second notifying means which notifies execution or stoppage of alternative printing for the print information transferred to the print controller on the basis of the indication status by the second indicating means to the print controller (the CPU 1 carries out notifying processing through execution of the control program stored in the ROM 3, the hard disk 12, or the external memory 11). As a result, it is possible to confirm the response information returned to the output processing request of the print information of which the output is requested to the external printer. When the first response information is

not approved, a plurality of alternatives can be presented upon receipt of the request indication of an alternative. User-oriented print services flexibly adapted to diverse and various needs, deputing print processing via the external shared printer can be smoothly accomplished.

[0071] The first response information includes an entered file name, estimate information calculated by the print controller, and print processing specifying information specified in the print information as shown later in Fig. 5.

It is therefore possible to confirm in advance the correctness of details of the estimate information relative to the requested print information, and details of the print processing indicating information, and to present information necessary and sufficient for the user to approve the requested details.

[0072] The estimate information includes the account information and the print processing time. It is therefore possible to confirm in advance the correctness of details of the estimate information such as the account information and the print processing time relative to the requested print information, and to present information necessary and sufficient for the user to approve the requested details.

[0073] The print processing specifying information includes a paper size, a kind of paper, a resolution, a kind of output and a number of sheets of output as specified in the

print information. It is therefore possible to confirm in advance the correctness of details of the print processing information such as a paper size, a kind of paper, a resolution, a kind of output and a number of sheets of output specified in the print information relative to the requested print information, and to present information necessary and sufficient for the user to approve the requested details.

[0074] The second response information may be, as shown later in Fig. 6, alternative print information calculated by the print controller on the basis of the print processing specifying information specified in the print information. Therefore, when the print processing based on the print processing specification specified by the user cannot be approved, it is possible to present to the user to cause the user to confirm alternative print information executed by the shared printer.

[0075] The alternative print information is calculated into a plurality of pieces of information on the basis of print resources available of the shared printer. Therefore, if the print processing based on the print processing indication specified by the user cannot be approved, it is possible to present to the user to urge the user to confirm an alternative print information executable, depending upon the print resources of the shared printer.

[0076] The present invention provides a print controller which controls a shared printer (printer 1500 capable of performing color printing) capable of providing print processing services through communication with an arbitrary data processor (any of a host computer 3000 and innumerable host computers not shown capable of being connected to a network (web)) via a prescribed communication medium (network (web)), comprising data receiving means which receives the print information including print data from the data processor and processing indicating information of the print data (the CPU 12 executes the control program stored in the ROM 13, the hard disk 23 or the external memory 14 and carries out receiving processing in accordance with a prescribed protocol); calculating means which calculates print estimate information for outputting the print information through the shared printer on the basis of the processing indicating information received by the data receiving means (the CPU 12 conducts calculating processing by executing the control program stored in the ROM 13, the hard disk 23, or the external memory 14); responding means which returns the response information including the print estimate information calculated by the calculating means and the print execution approving information (the CPU 12 performs responding processing through execution of the control program stored in the ROM 13, the hard disk 23, or

the external memory 14); a confirming means which confirms the approval indicating status from the requesting data processor (the CPU 12 performs confirming processing through execution of the control program stored in the ROM 13, the hard disk 23, or the external memory 14); and control means which controls the start of printing or the stoppage of printing by the shared printer (printer engine 17) for the print information received on the basis of the result of confirmation by the confirming means (the CPU 12 conducts control through execution of the control program stored in the ROM 13, the hard disk 23, or the external memory 14). When processing print information received upon receipt of a request for print processing from an external user, therefore, it is possible to present response information including the print estimate information required for processing of print information and print execution approving information to the user, and when confirmation of approval of details after presentation, print processing is started. Such print services can be provided to the user, thus making it possible to improve the print processing environment.

[0077] The present invention provides a print controller which controls a shared printer (printer 1500 capable of performing color printing) capable of providing print processing services through communication with an arbitrary

data processor (any of the host computer 3000 and innumerable host computers, not shown, connectible to the network (Web), comprising data receiving means which receives print information including print data and processing indicating information of the print data (the CPU 12 performs receiving processing in compliance with a prescribed protocol through execution of a control program stored in the ROM 13, the hard disk 23, or the external memory 14); calculating means which calculates print estimate information for outputting the print information through the shared printer on the basis of the processing indicating information received by the data receiving means (the CPU 12 conducts calculating processing through execution of the control program stored in the ROM 13, the hard disk 23, or the external memory 14); first responding means which returns first response information including print estimate information calculated by the calculating means and first execution approving information to the print requesting data processor (the CPU 12 carries out responding processing through execution of the control program stored in the ROM 13, the hard disk 23, or the external memory 14); first confirming means which confirms the approval indicating status from the print requesting data processor after returning the first response information by the first responding means (the CPU 12 carries out confirming

processing through execution of the control program stored in the ROM 13, the hard disk 23, or the external memory 14); first control means which controls start of printing or stoppage of printing by the shared printer for the print information received on the basis of the result of configuration by the first confirming means (the CPU 12 performs control through execution of the control program stored in the ROM 13, the hard disk 23, or the external memory 14); second responding means which returns second response information including a plurality of print processing alternatives to the print information received on the basis of an alternative requesting indication from the print requesting data processor after returning the first response information by the first responding means (the CPU 12 conducts the responding processing through execution of the control program stored in the ROM 13, the hard disk 23, or the external memory 14); second confirming means which confirms the alternative approval indicating status from the print requesting data processor after returning the second response information by the second responding means (the CPU 12 conducts confirming processing through execution of the control program stored in the ROM 13, the hard disk 23, or the external memory 14); and second control means which controls start of printing or stoppage of printing by the shared printer for the print information received on the

basis of the result of configuration by the first confirming means (the CPU 12 performs control through execution of the control program stored in the ROM 13, the hard disk 23, or the external memory 14. As a result, when processing the print information received at the request of print processing from an external user, response information including the print estimate information required for processing of the print information and the print execution approving information is presented to the user. After presentation, user's confirmation of approval of the contents may be obtained. If such an approval of contents is not obtained, when an alternative indication is given, a plurality of various calculated details of print processing are presented to the user. When an approval of the alternative is confirmed, print processing is started. It is thus possible to achieve an improved processing environment enabling to provide such flexible print services to the user.

[0078] Fig. 4 is a flowchart illustrating a typical first data processing procedure of the data processor and the print controller of the present invention. The numerals (1) to (6) represent individual steps.

[0079] In step (1), print data (including, in addition to document information, such information as paper size, resolution and kind of paper) are transferred from any of

computers 112 to 114 to the shared printer 111. The shared printer 111 having received the print data analyzes the received print data. If the print data contain defects or cannot be processed by the printer, an error message is issued in step (6), thus completing the process.

[0080] On the other hand, if the print data contain no problem, a number of printed pages and the print processing time are derived. It is then determined whether or not it is possible to cope with print incidental information (paper size, kind of paper, resolution, etc.) received from the customer. If not possible, alternative means is taken (when A3 printing as requested is not executable, it is converted into A4). Estimate information is accordingly generated for the new print information and transferred to the customer for presentation (2). More specifically, estimate information as shown in Fig. 2 is transferred to the user. Transmission to the user is conducted through Web. This may be controlled so as to permit switching to electronic mail or telephone transmission.

[0081] Then, in step (3), the user having received estimate information for the print information determines whether or not the contents of the print is accepted, i.e., whether or not the button BT1 for approval of print execution based on the presented estimate information is indicated to be pressed down. When the user approves execution, the

information corresponding to the button BT1 is transferred to the shared printer 111. On the shared printer 111 side, if the user does not approve the same, i.e., when pressing of the button BT2 is indicated in the screen shown in Fig. 2, the print processing for the received print information is not executed, and the processing comes to an end.

[0082] On the other hand, in step (3), if an approval indication is determined to have been obtained from the user, the shared printer 111 executes the print operation with the details presented in the print estimate information in step (4). In step (5), upon the completion of printing, the shared printer 111 notifies the user to that effect in step (5), thus completing a series of operations.

[0083] In this embodiment, a case where the approval of the received print processing is confirmed in a dialog form on the screen of user's computer has been described. It is however conceivable to give an approval in characters by communication means not having an expression means of characters alone such as electronic mail (for example, responding in electronic mail with "Yes" for approval and with "No" for non-approval).

[0084] By means of this embodiment, a customer can confirm the details of printing at customer's site before beginning printing. Since a proposed time of printing completion and an actual time of printing completion are notified, the

customer is never required to wait at the store.

[0085] The characteristic configuration of this embodiment will now be described with reference to Fig. 4 and other drawings.

[0086] There is provided a data processing method of a data processor capable of communicating with a print controller which controls a shared printer (printer 1500 capable of performing color printing) capable of providing print processing services through communication with an arbitrary data processor (any of the host computer 3000 and innumerable host computers, not shown, connectible to a network (Web)) via a prescribed communication medium (network (Web)) having the above-mentioned configuration; or a storage medium storing computer-readable programs which control a data processor capable of communicating with a print controller which controls an external shared printer capable of providing print processing services via a prescribed communication medium, comprising a transfer step (step (1) in Fig. 4) of transferring the print information to the print controller via the prescribed communication medium; a receiving step (step (2) in Fig. 3) of receiving response information returned from the print controller, after transferring the print information in the transfer step; a display step (not shown) of displaying the response information received in the receiving step; an indicating

step (step (3) in Fig. 4) of indicating the presence or absence of an approval to the response information displayed on the display unit in the display step; and a notifying step (not shown) of notifying execution of printing or stoppage of printing for the print information transferred to the print controller on the basis of the indication status in the indicating step, to the print controller. The user can therefore confirm the response information responded to the output processing request of the print information of which the output is requested to an external printer, and thus make a decision on the acceptability of start of print processing of the print information. It is therefore possible to smoothly provide user-oriented print services of deputing the print processing via the external shared printer.

[0087] The response information includes an entered file name, estimate information calculated by the print controller, and print processing specifying information specified in the print information. It is therefore possible to confirm in advance the correctness of the estimate information as compared with the requested print information and details of the print processing indicating information, and to present information necessary and sufficient for the user to approve the details of the request.

[0088] Since the estimate information includes account information and a print processing time, it is possible to confirm in advance the correctness of details of the estimate information such as the account information and the print processing time relative to the requested print information, and to present information necessary and sufficient for the user to approve the details of the request.

[0089] The print processing indicating information include a paper size, a kind of paper, a resolution, a kind of output, and a number of sheets of output specified in the print information. It is therefore possible to confirm in advance the correctness of the details of the print processing information such as the paper size, the kind of paper, the resolution, the kind of output, and the number of sheets of output, and the present information necessary and sufficient for the user to approve the details of the request.

[0090] There is provided a data processing method of a print controller which controls a shared printer capable of providing print processing services through communication with an arbitrary data processor via a prescribed communication medium (network (Web)); or a storage medium storing computer-readable programs which control a print controller controlling a shared printer capable of providing

print processing services through communication with an arbitrary data processor via a prescribed communication medium; comprising a data receiving step (step (1) in Fig. 4) of receiving the print information including print data from the data processor and the processing indicating information of the print data; a calculating step (not shown) of calculating print estimate information for outputting the print information from the shared printer on the basis of the processing indicating information received in the data receiving step; a responding step (step (2) in Fig. 4) of returning response information including the print estimate information calculated in the calculating step and the print execution approving information; a confirming step (step (3) in Fig. 4) of confirming the approval indicating status from the requesting data processor, after returning the response information in the responding step; and a deciding step (step (3) in Fig. 4) of deciding start of printing or stoppage of printing by the shared printer for the print information received on the basis of the result of confirmation in the confirming step. When processing the print information received at an external user's request for the print processing, the user can present response information including the print estimate information required for processing the print information and the print execution approving information.

When the user confirms user's approval of the presented details, it is possible to achieve a print processing environment capable of providing print services to the user of starting print processing.

[0091] [Second Embodiment] This embodiment not only presents information of a printing method requested by the user upon presenting the print information shown in the first embodiment, but also presents alternatives (cost reduction, change in resolution, etc.), and may build a configuration so as to provide the user with choices of printing methods. Such an embodiment will now be described in the following paragraphs.

[0092] Figs. 5 and 6 illustrate typical information display screens exchanged between the data processor and the print controller in the second embodiment of the present invention, corresponding to the estimate information screen displays regarding print processing transferred from the shared printer 111 to the individual computers 112 to 114 shown in Fig. 1.

[0093] In Figs. 5 and 6, as estimate information regarding print processing, the file name F1 regarding the received print information, the amount F2 necessary for printing, the proposed printing completion time F3, and other printing information F4 including the paper size, the kind of paper, the resolution, monochromatic/color, and the number of

sheets of printed paper, displayed in a prescribed format.

[0094] Reference numeral BT1 represents a selection button. When actually carrying out printing requested to the shared printer 111, the selection button BT1 is pressed down. BT3 represents another selection button: this is pressed down when requesting presentation of an alternative different from the presented estimate.

[0095] Fig. 6 illustrates a display showing an alternative selecting screen presented by the shared printer 111 when the selection button BT3 shown in Fig. 5 is pressed down for indication.

[0096] In Fig. 6, reference numerals BT4 to BT6 represent selection buttons, and are pressed down for indication when adopting any of the alternatives 1 to 3 presented. BT7 represents another selection button which is pressed down for indication when discontinuing printing.

[0097] Fig. 7 is a flowchart illustrating a typical second data processing procedure between the data processor and the print controller in the present invention. Reference numerals (1) to (8) represent individual steps.

[0098] In step (1), print data (including document data, as well as such information as a paper size, a resolution, and a kind of paper) are transferred from any of the computers 112 to 114 to the shared printer 111. The shared printer 111 having received the print data analyzes the print data,

and when the print data contain defects or cannot be processed by the printer, an error message is issued in step (8), thus completing the process.

[0099] On the other hand, if there is no problem in the print data, a number of printed pages and the print processing time are derived. The user determines whether or not the print incidental information sent from the customer (paper size, kind of paper, resolution, etc.) can be coped with. If impossible, an alternative is adopted (if A3 printing is not applicable despite the request, A4 is adopted). New estimate information is generated in place of the presented one, and transferred to the customer for presentation. More specifically, estimate information as shown in Fig. 5 is transferred to the user (2). Responding is by means of Web, but it may be converted so as to permit responding by electronic mail or by telephone.

[0100] Then in step (3), the user having received the estimate information regarding the print information determines whether or not printing with the presented contents is to be approved, i.e., whether or not the selection button BT1 for approving the execution of printing based on the presented estimate information is pressed down for indication. When the user approves the selection, the information corresponding to the button BT1 is transferred to the shared printer 111, and the process advances to step

(6) and the subsequent steps. When the selection button BT1 is not determined to be pressed down for indication, the selection button BT3 is pressed down for indication to request presentation of another alternatives. Then in step (4), the estimate display screen presents a plurality of alternatives. It is determined which of the selection buttons BT4 to BT6 is pressed down for indication. If adoption of an alternative is determined to be indicated, the notice of adoption of an alternative corresponding to any of the selection buttons BT4 to BT6 is notified to the shared printer 111, and the process advances to step (6).

[0101] In step (5), on the other hand, when an alternative is not determined to be adopted, i.e., when the selection button BT7 is determined to be pressed down, the print processing of the received print information is not executed, and the process comes to an end.

[0102] In step (3), on the other hand, if an approval indication is determined to be obtained from the user, the shared printer 111 executes the printing operation based on the contents presented in the print estimate information shown in Fig. 5, or based on an alternative selected from among those shown in Fig. 6 in step (6). Upon the completion of printing, the shared printer 111 notified the user to that effect in step (7), thus completing the series of operations.

[0103] The characteristic configuration of this embodiment will now be described with reference to the flowchart shown in Fig. 7.

[0104] This embodiment provides a data processing method of a data processor capable of communicating with a print controller which controls an external shared printer (printer engine 17 capable of conducting color printing of the printer 1500) capable of providing print processing services via a prescribed communication medium (network (Web)) having the above-mentioned configuration, or a storage medium storing computer-readable programs which control a data processor capable of communicating with a print controller which controls an external shared printer capable of providing print processing services via a prescribed communication medium, comprising a transfer step (step (1) in Fig. 7) of transferring the print information via the prescribed communication medium for the print controller; a receiving step (step (2) in Fig. 7) of receiving first response information returned from the print controller or second response information different from the first response information, after the transfer of the print information in the transfer step; a first display step (not shown) of displaying for confirmation the first response information received in the receiving step on a display unit; a first indicating step (step (3) in Fig. 7) of

indicating for approval or indicating as an alternative the first response information displayed on the display unit in the first display step; a first notifying step (not shown) of notifying execution of printing of the print information transferred to the print controller when an approving indication is made to the first response information in the first indicating step; a second display step (step (4) in Fig. 7) of causing the display unit to display a plurality of second pieces of response information received in the receiving step when an alternative indication is made to the response information in the first indicating step; a second indicating step (step (5) in Fig. 7) of indicating adoption or stoppage of printing of the second response information displayed on the display unit in the second display step; and a second notifying step (not shown) of notifying execution or stoppage of alternative printing of the print information transferred to the print controller on the basis of the indicating status in the second indicating step. As a result, the user who is the requester can confirm the response information to be responded to an output processing request of the print information of which output is requested to an external supplied printer and make a decision about acceptability of start of print processing of the print information. When the first response information cannot be approved, a plurality of alternatives can be

presented upon receipt of an alternative requesting indication. It is thus possible to conduct smooth printing services flexibly adapted to various user-oriented needs for deputing print processing via the external shared printer.

[0105] The above-mentioned first response information includes an entered file name, estimate information calculated by the print controller, and print processing specifying information specified in the print information. It is therefore possible to confirm in advance the correctness of the details of the estimate information and the print processing indicating information relative to the requested print information, and to present information necessary and sufficient for the user to approve the requested details.

[0106] The estimate information includes the account information and the print processing time. It is therefore possible to confirm in advance the correctness of details of the estimate information such as the account information and the print processing time relative to the requested print information, and to present information necessary and sufficient for the user to approve the requested details.

[0107] The print processing specifying information includes a paper size, a kind of paper, a resolution, a kind of output and a number of sheets of output as specified in the print information. It is therefore possible to confirm in

advance the correctness of details of the print processing information such as a paper size, a kind of paper, a resolution, a kind of output and a number of sheets of output specified in the print information relative to the requested print information, and to present information necessary and sufficient for the user to approve the requested details.

[0108] The second response information may be alternative print information calculated by the print controller on the basis of the print processing specifying information specified in the print information. Therefore, when the print processing based on the print processing specification specified by the user cannot be approved, it is possible to present to the user to cause the user to confirm alternative print information executed by the shared printer. The alternative print information is calculated into a plurality of pieces of information on the basis of print resources available of the shared printer. Therefore, if the print processing based on the print processing indication specified by the user cannot be approved, it is possible to present to the user to urge the user to confirm an alternative print information executable, depending upon the print resources of the shared printer.

[0109] In addition, there is provided a data processing method of a print controller which controls a shared printer

capable of providing print processing services through communication with an arbitrary data processor via a prescribed communication medium (network (Web)); or a storage medium storing computer-readable programs which control the shared printer capable of providing print processing services through communication with an arbitrary data processor via a prescribed communication medium; comprising a data receiving step (step (1) in Fig. 7) of receiving the print information including the print data and the processing indicating information of the print data from the data processor; a calculating step (not shown) of calculating print estimate information for outputting the print information from the shared printer on the basis of the processing indicating information received in the data receiving step; a first responding step (step (2) in Fig. 7) of returning the first response information including the print estimate information calculated in the calculating step and the print execution approving information to the print requesting data processor; a first confirming step (not shown) of confirming the approval indicating status from the print requesting data processor after returning the first response information in the first responding step; a first deciding step (step (3) in Fig. 7) of controlling start of printing or stoppage of printing by the shared printer for the received print information based on the

result of confirmation in the first confirming step; a second responding step (not shown) of returning the second response information including a plurality of print alternatives for the print information received on the basis of the alternative requesting indication from the print requesting data processor after returning the first response information in the first responding step; a second confirming step (step (4) in Fig. 7) of confirming the alternative approval indicating status from the print requesting data processor after returning the second response information in the second responding step; and a second deciding step (step (5) in Fig. 7) of controlling start of printing or stoppage of printing by the shared printer for the print information received on the basis of the result of confirmation in the first confirming step. As a result, when processing print information received at the request for print processing of an external user, it is possible to present response information indicating print estimate information required for processing the print information and the print execution approving information to obtain user's confirmation of the approval of the contents after presentation. When the contents are not approved, but there are alternatives, diverse details of print processing calculated can be presented to a plurality of users. Flexible print services of beginning print services can be

provided when approval of an alternative is confirmed, to the users, thus achieving an improved print processing environment.

[0110] In this embodiment, as described above, when A3 size printing has first been requested, but execution with A3 is not possible, it is possible to generate estimate information to adopt A4 size as an alternative and transfer it to the customer for presentation.

[0111] More specifically, the estimate information as shown in Figs. 5 and 6 is transferred to the user. Transmission is usually by means of the Web, but a switching control may be adopted so as to permit transmission by electronic mail or telephone.

[0112] On the screen shown in Fig. 5, when the user does not approve printing, but selects display of alternatives, the shared printer 111 transfers the alternatives to user's computer and show a display listing the alternatives as shown in Fig. 6. From among these alternatives, the first one presents an amount in a case where color printing is changed into monochromatic printing. The second alternative presents an amount required when resolution is reduced. The third one presents an amount in the case where a reduction mode is used. As a result, the user can complete a printing indication based on an adopted alternative through a simple operation of selecting the alternative by pressing any of

the selection buttons BT4 to BT6 without the need to obtain the resource information of the shared printer 111, only if available alternatives are presented among choices.

[0113] In this embodiment, a case where confirmation of approval of the received print processing is carried out in a dialog manner on the screen of the user's computer has been described. It is however conceivable to give an approval in characters by communication means not having an expression means of characters alone such as electronic mail (for example, responding in electronic mail with "Yes" for approval and with "No" for non-approval).

[0114] By means of this embodiment, a customer can confirm the details of printing at customer's site before beginning printing. Since a proposed time of printing completion and an actual time of printing completion are notified, the customer is never required to wait at the store.

Presentation of alternatives enables the user to select a printing method more suitable to user's needs.

[0115] The configuration of the data processing program readable by a printing system to which the data processor and the print controller of the present invention are applicable will now be described with reference to the memory map shown in Fig. 8.

[0116] Fig. 8 illustrates the memory map of the storage medium storing various data processing programs readable by

a printing system to which the data processor and the print controller of the present invention are applicable.

[0117] Although not shown, information controlling program groups stored in the storage medium, such as version information and authors are also stored, and information dependent upon an OS or the like on the program reading side, including icons identifying and displaying programs may be stored.

[0118] Furthermore, data dependent on various programs are managed by directories. Programs for installing various programs into computers, and when installing compressed programs, decompressing programs may also be stored.

[0119] The functions in this embodiment shown in Figs. 4 and 7 may be accomplished by the host computer by means of programs installed from outside. In this case, the present invention is applicable even when groups of information including programs are supplied to the output units by storage media such as CD-ROMs, flash memories and FDs, or from external storage media via a network.

[0120] The object of the present invention can of course be achieved even by supplying storage media recording program codes of software which materializes the functions of the above-mentioned embodiments to a system or a device, and by causing a computer of the system or device (or a CPU or an MPU) to read out and execute the program codes stored in the

storage media.

[0121] In this case, program codes themselves read out from the storage medium achieve novel functions of the present invention, and the storage media which store these program codes compose the present invention.

[0122] Applicable storage media for supplying program codes include, for example, a floppy disk, a hard disk, an optical disk, a magneto-optical disk, a CD-R, a magnetic tape, a non-volatile memory card, a ROM and an EEPROM.

[0123] By executing the program codes read out by the computer, the above-mentioned embodiments are achieved, and in accordance with instruction given by the program codes, all or part of actual processing is carried out by the OS (operating system) operating on the computer. Cases where these functions of the embodiments are materialized through processing thereof are also included.

[0124] The program codes read out from the storage medium are written in expanded function boards inserted into the computer or memories of the function expansion unit connected to the computer. Then, in accordance with the instruction of the program codes, CPUs provided in these function expanding board or the function expanding unit then perform all or part of actual processing, and this processing further achieves functions of these embodiments.

[0125]

[Advantages] As described above, the first aspect of the present invention provides a data processor capable of communicating with a print controller which controls an external shared printer capable of providing print processing services via a prescribed communication medium, comprising transfer means which transfers print information via the prescribed communication medium to the print controller; receiving means which, after the transfer of the print information by the transfer means, receives response information returned from the print controller; display means which causes a display unit to display the response information received by the receiving means; indicating means which indicates the presence or absence of an approval to the response information displayed on the display unit by the display means; and notifying means which notifies to the print controller execution or stoppage of printing to the print information transferred to the print controller on the basis of the present invention, wherein the response information includes an entered file name, estimate information calculated by the print controller, and print processing specifying information specified in the print information. The user can therefore confirm the response information responded to the output processing request of the print information of which the output is requested to an external printer, and thus make a decision on the

acceptability of start of print processing of the print information. It is therefore possible to smoothly provide user-oriented print services of deputing the print processing via the external shared printer.

[0126] According to the second aspect of the present invention, the response information includes an entered file name, estimate information calculated by the print controller, and print processing specifying information specified in the print information. It is therefore possible to confirm in advance the correctness of details of the estimate information relative to the requested print information, and details of the print processing indicating information, and to present information necessary and sufficient for the user to approve the requested details.

[0127] According to the third aspect of the present invention, the estimate information includes account information and a print processing time. It is therefore possible to confirm in advance the correctness of details of the estimate information such as the account information and the print processing time relative to the requested print information, and to present information necessary and sufficient for the user to approve the requested details.

[0128] According to the fourth aspect of the present invention, the print processing specifying information includes the paper size, the kind of paper, resolution, kind

of output and the number of sheets of output. It is therefore possible to confirm in advance the correctness of details of the print processing information such as the paper size, the kind of paper, resolution, the kind of output and the number of sheets of output specified in the print information relative to the requested print information, and to present information necessary and sufficient for the user to approve the requested details.

[0129] According to the fifth aspect of the present invention, there is provided a data processor capable of communicating with a print controller which controls an external shared printer capable of providing services via a prescribed communication medium, comprising transfer means which transfers print information via the prescribed communication medium to the print controller; receiving means which, after the transfer of the print information by the transfer means, receives first response information returned from the print controller or second response information different from the first response information; first display means which causes a display unit to display for confirmation the first response information received by the receiving means; first indicting means which indicates for approval or indicates as an alternative the first response information displayed on the display unit by the first display means; first notifying means which, when an

indication of approval is made by the first indicating means to the first response information, notifies execution of printing of the print information transferred to the print controller; second display means which, when the first indicating means performs an alternative indication to the first response information, causes display of a plurality of the second response information received by the receiving means to the display unit as alternatives; second indicating means which indicates adoption or stoppage of printing of the second response information displayed on the display unit by the second display means; and second notifying means which notifies execution or stoppage of alternative printing to the print controller for the print information transferred to the print controller on the basis of the indication status due to the second indicating means. As a result, it is possible to confirm the response information returned to the output processing request of the print information of which the output is requested to the external printer. When the first response information is not approved, a plurality of alternatives can be presented upon receipt of the request indication of an alternative. User-oriented print services flexibly adapted to diverse and various needs, deputing print processing via the eternal shared printer can be smoothly accomplished.

[0130] According to the sixth aspect of the present

invention, the first response information includes an entered file name, estimate information calculated by the print controller, and print processing indicating information indicated to the print information. It is therefore possible to confirm in advance the correctness of details of the estimate information relative to the requested print information, and details of the print processing indicating information, and to present information necessary and sufficient for the user to approve the requested details.

[0131] According to the seventh aspect of the present invention, the estimate information includes account information, and a print processing time. It is therefore possible to confirm in advance the correctness of details of the estimate information such as the account information and the print processing time relative to the requested print information, and to present information necessary and sufficient for the user to approve the requested details.

[0132] According to the eighth aspect of the present invention, the print processing indicating information includes a paper size, a kind of paper, a resolution, a kind of output, and a number of sheets of output specified in the print information. It is therefore possible to confirm in advance the correctness of details of the print processing information such as a paper size, a kind of paper, a

resolution, a kind of output and a number of sheets of output specified in the print information relative to the requested print information, and to present information necessary and sufficient for the user to approve the requested details.

[0133] According to the ninth aspect of the present invention, the second response information is alternative print information calculated by the print controller on the basis of the print processing specifying information specified in the print information. Therefore, when the print processing based on the print processing specification specified by the user cannot be approved, it is possible to present to the user to cause the user to confirm alternative print information executed by the shared printer.

[0134] According to the tenth aspect of the present invention, the alternative print information calculated into a plurality of pieces of information on the basis of printing resources of the shared printer. Therefore, when the print processing based on the print processing specification specified by the user cannot be approved, it is possible to present to the user to cause the user to confirm alternative print information executed by the shared printer, depending upon the print resources available.

[0135] According to the eleventh and twenty-first aspects of the present invention, there is provided a data

processing method for a data processor capable of communicating with a print controller which controls an external shared printer capable of providing print processing services via a prescribed communication medium, or a storage medium storing a computer-readable program which controls a data processor capable of communicating with a print controller which controls an external shared printer capable of providing print processing services via a prescribed communication medium. comprising a transfer step of transferring the print information to the print controller via the prescribed communication medium; a receiving step of receiving, after transferring the print information in the transfer step, the response information returned from the print controller; a display step of displaying the response information received in the receiving step on a display unit; and indicating step of indicating the presence or absence of an approval to the response information displayed on the display unit in the display step; and a notifying step of notifying execution of printing or stoppage of printing for the print information transferred to the print controller on the basis of the indicating status of the indicating step to the print controller. It is therefore possible to confirm the response information responded to an output processing request of print information output-requested to an external

shared printer, and the user who is a requester can decide the acceptability of start of print processing of the print information. It is thus possible to smoothly perform user-oriented print services by deputing print processing via the external shared printer.

[0136] According to the twelfth and twenty-second aspects of the present invention, the response information includes an entered file name, estimate information calculated by the print controller, and print processing indicating information indicated in the print information. It is therefore possible to confirm in advance the correctness of the estimate information as compared with the requested print information and details of the print processing indicating information, and to present information necessary and sufficient for the user to approve the details of the request.

[0137] According to the thirteenth and twenty-third aspects of the present invention, the estimate information includes account information and a print processing time. It is therefore possible to confirm in advance the correctness of details of the estimate information such as the account information and the print processing time relative to the requested print information, and to present information necessary and sufficient for the user to approve the details of the request.

[0138] According to the fourteenth and twenty-fourth aspects of the present invention, the print processing indicating information includes a paper size, a kind of paper, a resolution, a kind of output, and a number of sheets of output specified in the print information. It is therefore possible to confirm in advance the correctness of the details of the print processing information such as the paper size, the kind of paper, the resolution, the kind of output, and the number of sheets of output, and the present information necessary and sufficient for the user to approve the details of the request.

[0139] According to the fifteenth and twenty-fifth aspects of the present invention, there is provided a data processing method for a data processor capable of communicating with a print controller which controls an external shared printer capable of providing print processing services via a prescribed communication medium, or a storage medium storing a computer-readable program which controls a data processor capable of communicating with a print controller controlling an external shared printer capable of providing print processing services via prescribed communication medium, comprising a transferring step of transferring print information via the prescribed communication medium to the print controller; a receiving step of receiving, after transferring the print information

in the transferring step, first response information or second response information different from the first response information returned from the print controller; a first displaying step of causing a display unit to display for confirmation the first response information received in the receiving step; a first indicating step of indicating for approval or indicating as an alternative the first response information displayed on the display unit in the first displaying step; a first notifying step of notifying, when approval of the response information is indicated in the first indicating step, execution of printing for the print information transferred to the print controller; and second displaying step, when an indication as an alternative is given to the first response information in the first indicating step, of displaying a plurality of alternatives of the second response information received in the receiving step to the display unit; a second indicating step of indicating adoption or stoppage of printing of the second response information displayed on the display unit in the second displaying step; and a second notifying step of notifying execution or stoppage of alternative printing of the print information transferred to the print controller on the basis of the indication status in the second indicating step of the print controller. As a result, the user, who is the requester, can confirm the response information to be

responded to an output processing request of the print information of which output is requested to an external supplied printer and make a decision about acceptability of start of print processing of the print information. When the first response information cannot be approved, a plurality of alternatives can be presented upon receipt of an alternative requesting indication. It is thus possible to conduct smooth printing services flexibly adapted to various user-oriented needs for deputing print processing via the external shared printer.

[0140] According to the sixteenth and twenty-sixth aspects of the present invention, the first response information includes an entered file name, estimate information calculated by the print controller, and print processing specifying information specified in the print information. It is therefore possible to confirm in advance the correctness of the details of the estimate information and the print processing indicating information relative to the requested print information, and to present information necessary and sufficient for the user to approve the requested details.

[0141] According to the seventeenth and twenty-seventh aspects of the present invention, the estimate information includes account information, and a print processing time. It is therefore possible to confirm in advance the

correctness of details of the estimate information such as the account information and the print processing time relative to the requested print information, and to present information necessary and sufficient for the user to approve the requested details.

[0142] According to the eighteenth and twenty-eighth aspects of the present invention, the print processing specifying information includes a paper size, a kind of paper, a resolution, a kind of output, and a number of sheets of output specified in the print information. It is therefore possible to confirm in advance the correctness of details of the print processing information such as the paper size, the kind of paper, resolution, the kind of output and the number of sheets of output specified in the print information relative to the requested print information, and to present information necessary and sufficient for the user to approve the requested details.

[0143] According to the nineteenth and twenty-ninth aspects of the present invention, the second response information is alternative print information calculated by the print controller on the basis of print processing specifying information specified in the print information. Therefore, when the print processing based on the print processing specification specified by the user cannot be approved, it is possible to present to the user to cause the user to

confirm alternative print information executed by the shared printer.

[0144] According to the twentieth and thirtieth aspects of the present invention, the alternative print information is calculated into a plurality of pieces of information on the basis of print resources of the shared printer. Therefore, when the print processing based on the print processing specification specified by the user cannot be approved, it is possible to present to the user to cause the user to confirm alternative print information executed by the shared printer.

[0145] According to the thirty-first aspect of the present invention, there is provided a print controller which controls a shared printer capable of providing print processing services through communication with an arbitrary data processor via a prescribed communication medium, comprising data receiving means which receives print information including print data from the data processor and processing indicating information of the print data; calculating means which calculates print estimate information for outputting the print information through the shared printer on the basis of the processing indicating information received by the data receiving means; responding means which returns response information including a print estimate information calculated by the calculating means and

print execution approval information to the print requesting data processor; confirming means which, after returning the response information by the responding means, confirms an approval indicating status from the print requesting data processor; and control means which controls print start or print stoppage by the shared printer for the print information received on the basis of the result of confirmation achieved by the confirming means. When processing print information received upon receipt of a request for print processing from an external user, therefore, it is possible to present response information including the print estimate information required for processing of print information and print execution approving information to the user, and when confirmation of approval of details after presentation, print processing is started. Such print services can be provided to the user, thus making it possible to improve the print processing environment.

[0146] According to the thirty-second aspect of the present invention, there is provided a printer controller which controls a shared printer capable of providing print processing services through communication with an arbitrary data processor via prescribed communication medium, comprising data receiving means which receives the print information including print data from the data processor and

processing indicating information of the print data;
calculating means which calculates print estimate
information for outputting the print information through the
shared printer on the basis of the processing indicating
information received by the data receiving means; first
responding means which returns first response information
including print estimate information calculated by the
calculating means and print execution approval information
to the print requesting data processor; first confirming
means which after returning the first response information
by the first responding means, confirms the approval
indicating status from the print requesting data processor;
first control means which controls the start of printing or
stoppage of printing by the shared printer for the print
information received on the basis of the result of
confirmation by the first confirming means; a second
responding means which returns, after responding to the
first response information by the first responding means,
the second response information including a plurality of
print processing alternatives to the print information
received on the basis of alternative requesting indication
from the print requesting data processor; second confirming
means which, after returning the second response information
by the second responding means, confirms the alternative
approval indicating status from the print requesting data

processor; and second control means which controls the start of printing or stoppage of printing by the shared printer for the print information received on the basis of the result of confirmation by the first confirming means.

[0147] According to the thirty-third and thirty-fifth aspects of the present invention, there is provided a data processing method for a print controller which controls a shared printer capable of providing print processing services through communication with an arbitrary data processor via a prescribed communication medium, or a storing medium storing a computer-readable program which controls a shared printer capable of providing print processing services through communication with an arbitrary data processor via a prescribed communication medium, comprising a data receiving step of receiving print information including print data and processing indicating information of the print data from the data processor; a calculating step of calculating print estimate information for outputting print information through the shared printer on the basis of the processing indicating information received in the data receiving step; a responding step of returning the response information including print estimate information calculated in the calculating step and print execution approving information to the print requesting data processor; a confirming step, after returning the response

information in the responding step, of confirming the approval indicating status from the print requesting data processor; and a deciding step of deciding start of printing or stoppage of printing by the shared printer for the print information received on the basis of the result of confirmation in the confirming step. When processing print information received upon receipt of a request for print processing from an external user, therefore, it is possible to present response information including the print estimate information required for processing of print information and print execution approving information to the user, and upon confirming approval of details after presentation, print processing is started. Such print services can be provided to the user, thus making it possible to improve the print processing environment.

[0148] According to the thirty-fourth and thirty-sixth aspects of the present invention, there is provided a data processing method for a print controller which controls a shared printer capable of providing print processing services through communication with an arbitrary data processor via a prescribed communication medium, or a storage medium storing a computer-readable program which controls a shared printer capable of providing print processing services through communication with an arbitrary data processor via a prescribed communication medium,

comprising a data receiving step of receiving print information including print data from the data processor and processing indicating information of the print data; a calculating step of calculating print estimate information for outputting the print information through the shared printer on the basis of the processing indicating information received in the data receiving step; a first responding step of returning first response information including the print estimate information calculated in the calculating step and print execution approving information to the print requesting data processor; a first confirming step, after returning the first response information in the first responding step, of confirming the approval indicating status from the print requesting data processor; a deciding step of controlling start of printing or stoppage of printing by the printer for the print information received on the basis of the result of confirmation in the first confirming step; a second responding step, after returning the second response information including a plurality of print processing alternatives for the print information received on the basis of the alternative request indication from the print requesting data processor; a second confirming step, after returning the second response information in the second responding step, of confirming the alternative approval indicating status from the print

requesting data processor; and a second deciding step of controlling start of printing or stoppage of printing by the shared printer for the print information received on the basis of the result of confirmation in the first confirming step. As a result, when processing the print information received at the request of print processing from an external user, response information including the print estimate information required for processing of the print information and the print execution approving information is presented to the user. After presentation, user's confirmation of approval of the contents may be obtained. If such an approval of contents is not obtained, when an alternative indication is given, a plurality of various calculated details of print processing are presented to the user. When an approval of the alternative is confirmed, print processing is started. It is thus possible to achieve an improved processing environment enabling to provide such flexible print services to the user.

[0149] Therefore, when a user accesses in an arbitrary store where a shared printer is installed, and the user asks processing of print information desired, the present invention provides advantages of freely perfecting the print service processing environment providing user-oriented print services while confirming details of print services provided and while confirming details of alternatives presented.

[Brief Description of the Drawings]

[Fig. 1] Fig. 1 is a block diagram illustrating the configuration of a print system to which the data processor and the print controller of the first embodiment of the present invention are applicable.

[Fig. 2] Fig. 2 illustrates a typical information display screen transferred from the shared printer to each computer shown in Fig. 1.

[Fig. 3] Fig. 3 is a block diagram illustrating a detailed configuration of a print system to which the data processor and the print controller of the first embodiment of the present invention are applicable.

[Fig. 4] Fig. 4 is a flowchart illustrating an example of the first data processing procedure of the data processor and the print controller of the present invention.

[Fig. 5] Fig. 5 illustrates an example of the information display screen exchanged between the data processor and the print controller of the second embodiment of the present invention.

[Fig. 6] Fig. 6 illustrates an example of the information display screen exchanged between the data processor and the print controller of the second embodiment of the present invention.

[Fig. 7] Fig. 7 is a flowchart illustrating an example of the second data processing procedure between the data

processor and the print controller of the present invention.

[Fig. 8] Fig. 8 illustrates a memory map of the storage medium storing various data processing programs readable in a print system to which the data processor and the print controller of the present invention are applicable.

[Reference Numerals]

- 1: CPU
- 2: RAM
- 3: ROM
- 12: CPU
- 13: ROM
- 17: Printer engine
- 19: RAM

FIG. 1

111: SHARED PRINTER

FIG. 2

(1) ESTIMATE OF PRINTING

(2) APPROVAL

(3) APPROVED

(4) NOT APPROVED

F1: FILE NAME

F2: AMOUNT: ¥760

F3: SCHEDULED PRINT COMPLETION TIME

F4: PRINT INFORMATION: A3, PLAIN PAPER, 600 DPI, COLOR, 12
SHEETS

FIG. 3

(1) HOST COMPUTER

(2) FONT ROM

(3) PROGRAM ROM

(4) DATA ROM

(5) FONT ROM

(6) PROGRAM ROM

(7) DATA ROM

(8) PRINTER

9: KEYBOARD

11: EXTERNAL MEMORY

12: PRINTER CPU
14: EXTERNAL MEMORY
1501: OPERATING PANEL
16: PRINTING SECTION INTERFACE
17: PRINTER ENGINE
18: INPUT UNIT
24: NON-VOLATILE MEMORY

FIG. 4

START

- (1) TRANSFER PRINT DATA (USER → PRINTER)
- (2) TRANSFER PRINT INFORMATION (PRINTER → USER)
- (3) IS PRINT APPROVED?
- (4) PRINTING
- (5) NOTICE OF END OF PRINTING (PRINTER → USER)
- (6) ERROR NOTICE

END

FIG. 5

- (1) ESTIMATE OF PRINTING
 - (2) APPROVED WITH DETAILS
 - (3) APPROVED
 - (4) DISPLAY ALTERNATIVES
- F1: FILE NAME
F2: AMOUNT: ¥1020

F3: SCHEDULED PRINT END TIME

F4: PRINT INFORMATION A3, PLAIN PAPER, 600 DPI, COLOR, 12
SHEETS

FIG. 6

- (1) ESTIMATE OF PRINTING
- (2) APPROVED WITH DETAILS APPROVED DISPLAY ALTERNATIVES
- (3) ALTERNATIVE 1: COLOR → MONOCHROMATIC ADOPTED
AMOUNT: ¥320
- (4) ALTERNATIVE 2: 600 DPI → 300 DPI ADOPTED
AMOUNT: ¥720
- (5) ALTERNATIVE 3: REDUCTION (2in1) ADOPTED
AMOUNT: ¥510
- (6) PRINT DISCONTINUED

FIG. 7

START

- (1) TRANSFER PRINT DATA (USER → PRINTER)
- (2) TRANSFER PRINT INFORMATION (PRINTER → USER)
- (3) PRINT APPROVED? DISPLAY ALTERNATIVES
- (4) DISPLAY ALTERNATIVES
- (5) IS ALTERNATIVE ADOPTED?
- (6) PRINTING
- (7) PRINTING AND NOTICE (PRINTER → USER)
- (8) ERROR NOTICE

END

FIG. 8

(1) STORAGE MEDIA SUCH AS FD/CD-ROM

(2) DIRECTORY INFORMATION

(3) FONT DATA PROCESSING PROGRAM

PROGRAM CODE GROUP CORRESPONDING TO STEPS OF FLOWCHART
SHOWN IN FIG. 4

(4) SECOND DATA PROCESSING PROGRAM

PROGRAM CODE GROUP CORRESPONDING TO STEPS OF FLOWCHART
SHOWN IN FIG. 7

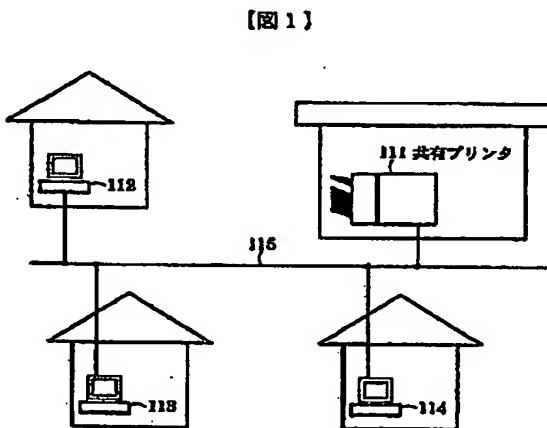
(5) MEMORY MAP OF STORAGE MEDIUM

による印刷開始または印刷中止を制御する第1の決定工程と、前記第1の返信工程による前記第1の応答情報の返信後、前記印刷要求元のデータ処理装置からの代替案要求指示に基づいて受信している印刷情報に対する複数の代替印刷処理案を含む第2の応答情報を返信する第2の返信工程と、前記第2の返信工程による前記第2の応答情報の返信後、前記印刷要求元のデータ処理装置からの代替案承認指示状態を確認する第2の確認工程と、前記第1の確認工程による確認結果に基づいて受信した印刷情報に対する前記共有印刷装置による印刷開始または印刷中止を制御する第2の決定工程とを有するので、外部のユーザから印刷処理の依頼を受けて受信した印刷情報を処理する際に、印刷情報の処理に要する印刷見積り情報、印刷実行承認情報を含む応答情報をユーザに提示し、該提示後ユーザによる内容承認の確認が得られた場合や、該内容承認が得られない場合に、代替案指示があれば、算定される多様な印刷処理内容を複数ユーザに提示して、該代替案を承認する確認が得られた場合には、印刷処理を開始するという柔軟なプリントサービスをユーザに提供できるプリント処理環境を構築することができる。

【0149】従って、共有印刷装置が設置される任意の店舗等にユーザがアクセスして、ユーザが意図する印刷情報を処理してもらう際に、提供されるプリントサービスの内容を確認したり、代替案の提示内容を確認しながら、ユーザ本位のプリントサービスを行えるプリントサービス処理環境を自在に整備することができる等の効果を奏する。

【図面の簡単な説明】

【図1】本発明の第1実施形態を示すデータ処理装置、印刷制御装置を適用可能な印刷システムの構成を説明す



るブロック図である。

【図2】図1に示した各コンピュータに対して共有プリンタから転送される情報表示画面の一例を示す図である。

【図3】本発明の第1実施形態を示すデータ処理装置、印刷制御装置を適用可能な印刷システムの詳細構成を説明するブロック図である。

【図4】本発明に係るデータ処理装置と印刷制御装置との第1のデータ処理手順の一例を示すフローチャートである。

【図5】本発明の第2実施形態を示すデータ処理装置と印刷制御装置とでやり取りされる情報表示画面の一例を示す図である。

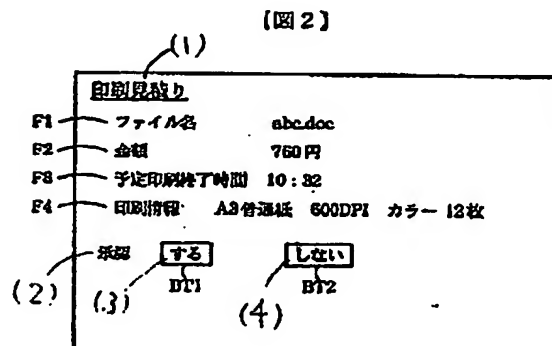
【図6】本発明の第2実施形態を示すデータ処理装置と印刷制御装置とでやり取りされる情報表示画面の一例を示す図である。

【図7】本発明に係るデータ処理装置と印刷制御装置との第2のデータ処理手順の一例を示すフローチャートである。

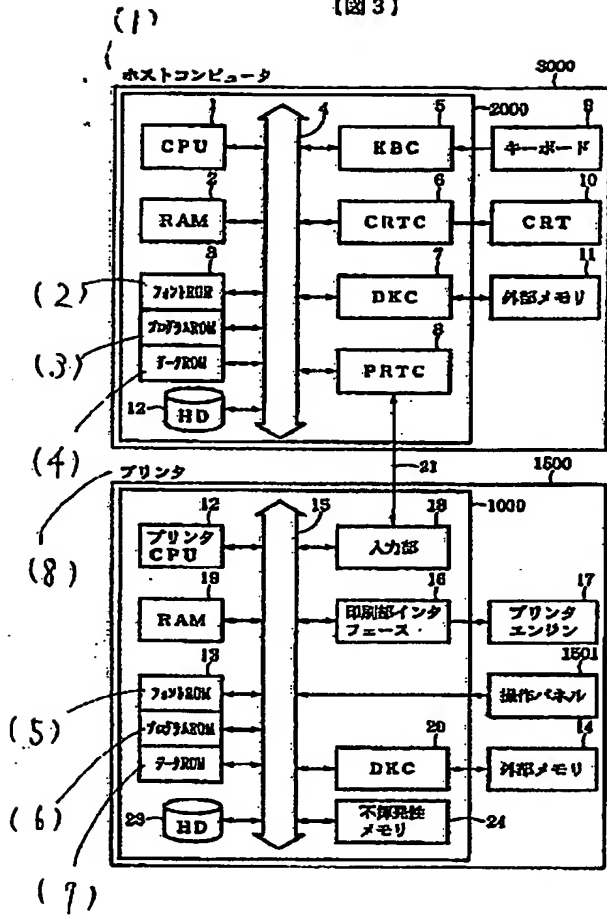
【図8】本発明に係るデータ処理装置、印刷制御装置を適用可能な印刷システムで読み出し可能な各種データ処理プログラムを格納する記憶媒体のメモリマップを説明する図である。

【符号の説明】

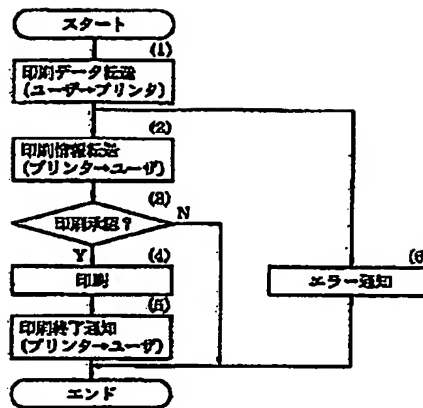
- 1 CPU
- 2 RAM
- 3 ROM
- 12 CPU
- 13 ROM
- 17 プリントエンジン
- 19 RAM



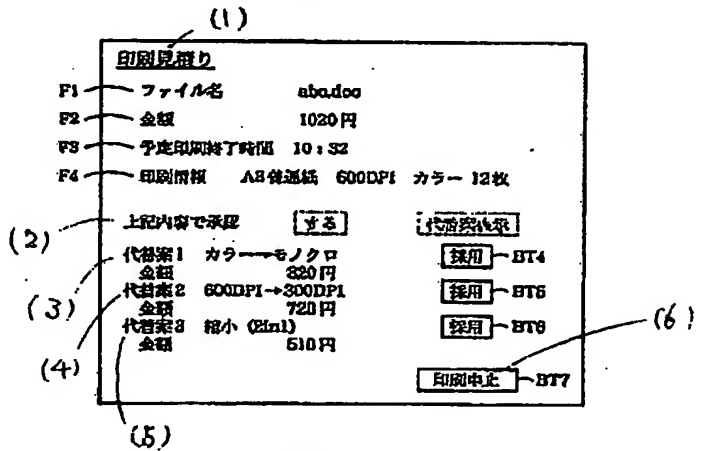
【図3】



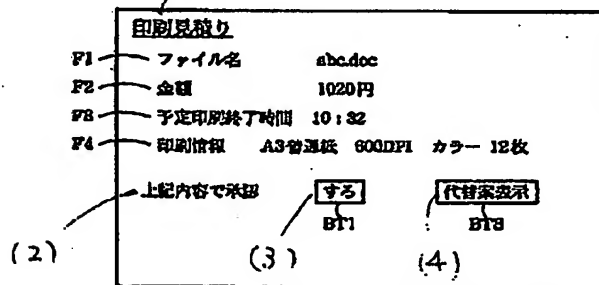
【図4】



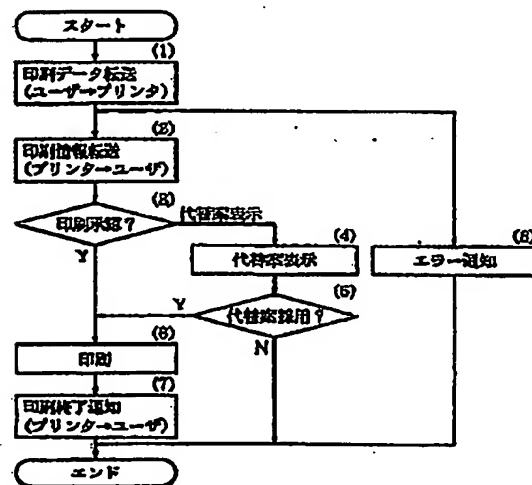
【図6】



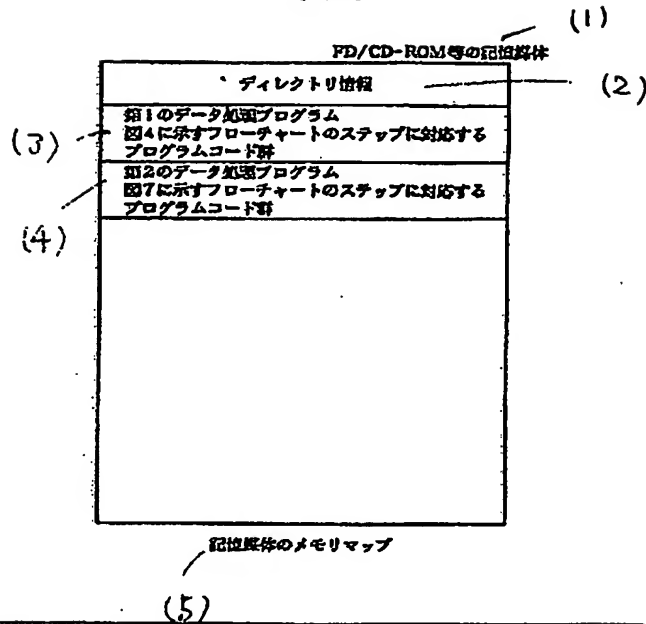
【図5】



【図7】



【図8】



フロントページの続き

(72) 発明者 西島 孝徳
東京都大田区下丸子3丁目30番2号 キヤ
ノン株式会社内

(72) 発明者 宇都宮 建
東京都大田区下丸子3丁目30番2号 キヤ
ノン株式会社内

(72) 発明者 岡澤 隆志
東京都大田区下丸子3丁目30番2号 キヤ
ノン株式会社内

(72) 発明者 秋元 浩一郎
東京都大田区下丸子3丁目30番2号 キヤ
ノン株式会社内

(72) 発明者 森 順一
東京都大田区下丸子3丁目30番2号 キヤ
ノン株式会社内

(72) 発明者 小野寺 健
東京都大田区下丸子3丁目30番2号 キヤ
ノン株式会社内

(72) 発明者 恒川 清宏
東京都大田区下丸子3丁目30番2号 キヤ
ノン株式会社内

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